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Four Years Later—Still Under Study

Part III: Chronicle of a Scientific Misconduct Case

This concludes a three-part series on a scientific misconduct case that has been inconclusively under investigation by the National Institutes of Health since 1982.

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In April 1984, the National Institutes of Health received the "final" report of its staff investigation of charges of scientific misconduct at the Cornell University Medical College.

The report had been slightly modified from a draft version in response to criticisms by the accuser, Dr. Jerome G. Jacobstein, MD, and by the Cornell authorities championing the accused, Dr. Jeffrey S. Borer, MD. However, the so-called final report settled nothing. Instead, it further inflamed the long-running dispute by serving as a platform for strong reiteration of a separate charge that Jacobstein's attorney, Harold P. Green, had played softly in the past: That Cornell had conducted a coverup; and now, he contended, NIH, if only through investigatory incompetence, was tolerating it.

Explicitly labeled as without "conclusions or recommendations," the report neither confirmed nor refuted the charges that Jacobstein had brought against Borer.

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It had Borer conceding some shortcomings, such as "sloppy" recordkeeping, but it also included material that tended to undercut some of Jacobstein's allegations. Prepared under the supervision of Howard Hyatt, Director of the NIH Division of Management Survey and Review, the report was forwarded to Dr. William F. Raub, the NIH Deputy Director for Extramural Research and Training, to whom Jacobstein's lawyer had appealed after Cornell dismissed the charges against Borer in 1981.

Raub had earlier indicated that the next step would be a review of the report and other materials by a committee of NIH officials, possibly with the assistance of "outside consultants," followed by a declaration of findings. But while he was presumably still digesting the report of his investigators, Raub received a critical analysis from attorney Green. Speckled with abusive terms that are everyday stuff in the lawyering business, the Green letter was not in harmony with the polite protocols of the Bethesda culture.

Referring to the "shoddiness" of the Hyatt report, Green charged that the NIH investigators had not interviewed Jacobstein during the course of their inquiry to check his accusations against Cornell's responses. (The NIH investigators did have written material from Jacobstein and NIH officials had met with Jacobstein shortly after NIH decided to look into the case. But once the actual investigation was underway, Jacobstein was not consulted.) Green also charged that the investigators had not examined Borer's data books. "Indeed," he added, "one cannot avoid drawing the inference . . . that there was a cozy relationship between the [NIH] investigator and [Cornell] personnel and that [Cornell] co-opted the investigator."

Green noted that Jacobstein possessed an original manuscript that could back up his claim that Borer had

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In Brief

Morale is dismal at the White House Science Office, where newly installed Director William R. Graham is described as secretive and icy toward the staff he inherited. Graham's only contact with the Reagan inner circle is reported to be Pat Buchanan, the raging right-winger on the presidential staff. Comparing Graham with his predecessor, George A. Keyworth, one observer says, "He's got Keyworth's paranoia without the charm."

Meanwhile, the incoming Chairman of the Senate Commerce, Science, and Transportation Committee is Ernest Hollings, who voted in committee against Graham's confirmation. Hollings contends that Graham, while serving as Acting Administrator of NASA, misled the Committee in stating that there had been no objections to the ill-fated Challenger launch.

A source tells SGR that Hollings is determined to explore lingering reports of a coverup of the White House pressuring NASA into the launch so that Reagan could hold a public radio chat with the teacher-astronaut.

"Do Scientists Tell the 'Truth'?" was the topic of a forum on Science and the Media October 29 at the Harvard School of Public Health, supported by a grant from Ivan F. Boesky, who since 1979 has contributed $25,000 to $50,000 a year to the school. Boesky was a member of the school's visiting committee, but resigned following the recent disclosure of his illegal stock dealings.

. . . NIH Agrees to an Extension of the Investigation

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unjustifiably altered a version published in the *American Journal of Cardiology*. But, Green wrote, the NIH investigators hadn't asked Jacobstein to substantiate his charges. And he reemphasized his claim that Jacobstein possessed important evidence that had not been examined. Green stressed that Jacobstein had all along offered his cooperation to the investigation, but, he said, it had inexplicably proceeded without calling on him. Green's letter to Raub concluded: "We are . . . concerned by the apparent fact that the NIH investigation has, unwittingly we hope, lent support to the Cornell University Medical College coverup."

A Delegation to Philadelphia

Whether from shock or intellectual persuasion, Raub took notice and caved in to Green's demand for an extension of the investigation. On July 18, 1984, NIH sent a four-member group to hear out Jacobstein at his office in Graduate Hospital in Philadelphia. Meeting with him, for nearly six hours, were Robert Lanman, the branch chief for NIH in the Office of the General Counsel of the Public Health Service; Thomas Robertson, a branch chief in cardiology at the National Heart, Lung, and Blood Institute, who was the medical expert for the group; Ron Gardiner, the NIH auditor who had conducted the Cornell investigation, and Gardiner's superior, Howard Hyatt.

The meeting, tape recorded by both sides, produced a 190-page transcript, in which Jacobstein, who was unaccompanied by his attorney, stated his purpose at the outset: "I would like to show why we believe the report, as it's now constituted, doesn't present our position fairly . . . . in order to press my request for a re-writing of the final document."

Jacobstein then proceeded to review the NIH account of the lengthy and complex events underlying his accusations and Borer's and Cornell's denials. In the course of his discussion, he dropped another high explosive into the controversy. Asked where he had obtained data that he claimed refuted a segment of Cornell's denials, Jacobstein at first skirted the question, but when pressed, replied: "I do have friends at Cornell who have helped me. For obvious reasons, I don't want to divulge their names. If it becomes an issue because my integrity or my statements are in question . . . then I would get their permission . . . . because some of them would be in slightly compromised positions."

And then he went on, analyzing laboratory records that he claimed contradicted Borer's statements on crucial points in the report, as well as the post-report issue Jacobstein had raised concerning the reported withholding of medications, mainly propranolol, from 54 patients in a cardiac test series. In a published paper, Borer and his co-authors had stated that medication had been withheld from all, as required by the test protocol. Challenged by Jacobstein, Borer issued a correction conceding that four and possibly an additional 10 patients had received medication on the day of the test.

Jacobstein now said that laboratory records in his possession indicated 61 patients—rather than the reported 54—had participated in the test series, and that as many as 43 may have received medication in violation of the protocol.

Jacobstein's guided tour of the laboratory records proved overwhelming at at least one point for Ron Gardiner, the NIH auditor who was the chief investigator of the Cornell events and the principal author of the report.

Gardiner, who was the obvious butt of Jacobstein's disdain for the report, apparently whispered puzzlement at one point to another member of the NIH group. "Is there a problem?" asked Jacobstein, interrupting his review of laboratory records.

"I'm Afraid I'm Snowed"

Replied Gardiner: "I just asked if he was following that, because I'm not. I'm afraid I'm snowed."

Jacobstein then turned to the paper in which Borer reported that patients in a test series were "alternated," rather than randomized, as was called for in the research protocol. The change in terminology was made after Ja-

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Prodded by Congress, NIH Tightening Fraud Rules—But Slowly

While the Jacobstein-Borer case has been under investigation, NIH—prodded by Congress and its own sensitivity to public doubt about the purity of science—has been creeping toward adopting new regulations for dealing with scientific misconduct.

A draft, which was originally supposed to be published in the *Federal Register* in August, still hasn't been put in final shape. But, in general, the new rules expand upon the Public Health Alert system, which is designed to register certified miscreants and bar them from the NIH bankroll.

In present draft form, the regulations assign specific duties to institutions that receive NIH funds. They'll be required to set up procedures for prompt preliminary inquiry into allegations of misconduct. Whether it's go or no go on investigation in depth, NIH is to be informed of the outcome, and if an investigation is undertaken, it's supposed to be completed within 120 days. If more time is required, NIH is to be notified.

The movement toward tighter regulations has been spurred by Congress's strong expressions of dissatisfaction with NIH's timid and leisurely approach to fraud cases. In June 1985, the House Committee on Energy and Commerce included the following in its report on the Health Research Extension Act of 1985: "Even in cases in which the subject of an NIH investigation has admitted wrongdoing, the agency has taken months, and in some cases over a year, to complete its reviews, announce its findings and impose sanctions." Added to the Research Act was a provision requiring NIH to establish and enforce regulations for "protection against scientific fraud."

According to Mary Miers, who holds the title of Misconduct Policy Officer at NIH, a variety of "sanctions" can be imposed in fraud cases. The range, she said, includes individual or institutional debarment from NIH support for short, long, or indefinite periods; "conditions" on further support; ineligibility for membership on NIH advisory bodies, or simply a letter of reprimand that amounts, she said, to a finding of "no big deal."

NIH has said that the only NIH money directly connected to the incidents under investigation at Cornell was a $742 summer stipend for a medical student involved in the disputed research. It explains that its interest in the case arose from the large sums that it provides to Cornell for a variety of purposes—some $30 million a year when the case first came up.

Borer, who came to Cornell from NIH in 1979, received a five-year grant from NIH in 1981 for $630,000 for cardiac research; he is also principal investigator on Cornell's segment of a multi-center clinical trial, for which Cornell received a five-year contract for $570,000 in 1983.

. . . Clash Over the Identity of Borer's Statistician

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cobstein challenged a draft of the paper. Borer contended that "alternated" had been approved by an unnamed statistician at the Environmental Protection Agency whom he had consulted. NIH's final report noted the absence of randomization, and quoted an undated letter from a "biostatistician" which stated that "the method of treatment assignment actually incorporated in this research is quite commendable since most of the operational research constraints of concern are satisfied."

Arguing that "treatment assignment" was irrelevant to the test series, which did not involve treatment, Jacobstein said, "Now, if that isn't a doubletalk, ambiguous, guarded statement about (sic) somebody who doesn't want to commit himself . . . . I would say that if you people read that at your leisure, I can't believe that all of you, with the possible exception of Mr. Gardiner . . . will not agree with me."

Why depend on an unidentified statistician at EPA, of all people? Jacobstein demanded. Who was he? Had investigator Gardiner sought to determine the relationship between Borer and the statistician?

Gardiner responded: "I'm beginning to get just a little tired of being always accused of being duped . . . . When you get into statements like this, that this guy at EPA owes him a favor, that's ridiculous. How in the world are we gonna prove it? How we gonna deal with anything like that? We can't."

"For one thing," Jacobstein replied, "you might have asked who the statistician was, and called him to find out what the date of the letter was." Jacobstein continued to assail Gardiner, stating that "I had requested that Mr. Gardiner not be here because I was afraid Mr. Gardiner would feel defensive about his report . . . "

Gardiner replied: "I have a supervisor. He signed the report . . . . why do you always point to me? Why don't you say DMSR (Division of Management Survey and Review) report?"

Returning to the letter from the unnamed EPA statistician, Jacobstein said, "The question is, was this done after Borer was pinned down and then went and got somebody, a friend of his, to do it, or was that letter there all along. I think that's a critical issue, and it was

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. . . NIH Brings in Two Specialists to Study the Case

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never addressed . . . . "

Why not? Hyatt offered the following: "We didn't pursue the letter, or who wrote it, because . . . we know what the situation is, what's required by randomization, what's required by alternation . . . . We know there's something wrong there, so who cares, you know . . . whether there was a good *bona fide* letter, we didn't even think about (sic)."

Jacobstein confronted Gardiner with his failure to consult with him on Cornell's responses to his charges. Gardiner responded: "How many [investigative] jobs do we do where the allegations pan out to be true? Most are false. Most don't pan out . . . . So, it's not unusual to make an investigation and find that the allegations don't pan out."

"The Way We Conduct Investigations . . ."

Jacobstein asked why Gardiner had failed to seek out an additional witness to one of the events in dispute. He replied, "Given all the discussion, I wish now that I had asked who the third person was in the room." On another point challenged by Jacobstein, Gardiner said: "I talked to three different people and got essentially the same answer . . . . The way we conduct investigations, I think Mr. Hyatt will agree, you talk with three people, you get essentially the same information, you feel like you've gotten an answer."

Jacobstein asked: "Even when all three have extreme motivation to misrepresent if they can?"

Hyatt responded: "We do find on occasion . . . just the opposite. Where there is somebody in there who's so concerned, so conscientious, they've got something to say."

With the session drawing to a close, Gardiner said to Jacobstein, "If I were as unobjective as you say, I would say that nothing you've said today has any merit . . . . But some of the things you've raised, raise good questions. I don't know the answer to them and I would be very anxious to find out."

The case then reverted to the NIH bureaucracy. In November 1984, after hearing nothing from NIH in the four months since the Philadelphia meeting, attorney Green sent a letter of inquiry to Hyatt, noting that "this matter has now been pending for approximately three years." Hyatt replied at once, with a suitably bizarre new complication for the interminable Jacobstein-Borer case: A review of the Philadelphia meeting had begun at once, he said, but "Unexpectedly, my office was directed to take immediate action on an extremely sensitive case submitted to the National Institutes of Health. As soon as this case is completed, we plan to pursue the completion of Dr. Jacobstein's case." [NIH declines to identify the "extremely sensitive case."]

In July 1985, one year after the Philadelphia meeting, NIH Deputy Director Raub announced a new step in the Jacobstein-Borer case: The appointment, by the National Heart, Lung, and Blood Institute, of two "independent experts to assist us in bringing our investigation of the charges against Dr. Jeffrey Borer to a conclusion." The experts were identified as Dr. Harvey Berger, MD, Director of Nuclear Medicine, Emory University, and Dr. Bertram Pitt, MD, Director of Cardiology, University of Michigan.

In a letter to Cornell announcing their appointment, Raub stated that the two had met with him and his staff at NIH in June and were "comfortable with the information we had on all the issues raised by Dr. Jacobstein except one—" the withholding of drugs prior to the cardiac test series. Cornell was asked to provide an extensive amount of data on that episode.

The expert committee submitted its report to NIH in June 1986. In August, having heard nothing further from NIH, Jacobstein sent an inquiry to Raub. A reply came from George J. Galasso, who had shortly before succeeded Raub on an acting basis when Raub was promoted to Deputy Director of NIH.

Referring to the case which had been under investigation by NIH since September 1982, Galasso wrote in September 1986: "Considerable staff effort is required to integrate the findings of our expert consultants with the information provided by you and our own investigation. We will complete that process as soon as practicable and provide you with a draft report at that time."

SGR was recently advised by officials at NIH that the matter is still being worked on.—DSG

OTA: Nearing Age 15 and Thriving After Rough Start

John H. Gibbons became Director of the Office of Technology Assessment in 1979, after the only two previous heads of the fledgling agency had resigned amid organizational confusion and allegations of political partisanship. With its 15th birthday coming up next year, OTA has settled down and evolved into a sturdy, prolific supporting service for the Congress, which relies on OTA as a trustworthy guide in a capital full of stacked decks. Gibbons, a physicist and environmental specialist, spent most of his pre-OTA career at the Oak Ridge National Laboratory. He spoke on November 18 with SGR Editor Greenberg. Following is the text, edited by SGR.

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***SGR.** OTA had a lot of difficulties in the beginning, and there were times when it looked like it wouldn't survive.*

Gibbons. It took several years to develop the method of operation. "Mim" [Emilio Daddario, former Congressman, legislative founder and Director of OTA, 1973-77] was a little bit more political [than his successors]. He was worried more, in a sense, about the politics of issues than the substance, because his background was law and politics. When Russ [Russell Peterson, OTA Director, 1978-79, now President of the Audubon Society] came, he had to depoliticize the place. It had gotten politicized through these [OTA Congressional] Board staffers living over here. Members of the Board could assign staff members who would be on OTA's payroll and working here on a project, but they were still basically that member's person. That was a bloody battle that Peterson rightly fought and won with the Board, and the Board wisely said, yeah, we've got to cease and desist that. Russ also had his own strong agenda. He's a born advocate. And Congress saw OTA as going off and doing its thing and not being a part of the Congress.

Last Chance for OTA

When I got here, one of my Board members took me aside and said, "I'm really glad you took on this job. I supported you. It's a very interesting agency, and I want you to know it's the last chance the agency has."

It took a lot of years to get over a perception that a lot of conservatives had that this was Ted Kennedy's plaything, which it wasn't and isn't. He takes a keen interest and has been very supportive, but so has Orrin Hatch, for instance.

***SGR.** What does OTA do for the Congress that committee staffs can't do or get from some other research organization?*

Gibbons. The Europeans have been asking that, too, and several of them have set up similar organizations or are studying it. You find a lot of these countries exhibiting a concern that their policymakers have a need for some source of analysis and advice that can deliver an authoritative, timely, "scrubbed" document, in terms of bias. The word "delivery" is not just "mail a copy to me," but be available to brief me, to testify on a piece of it, to tell me more about some section of it, to go back and revisit it and tell me again what it was you said. And that's this "looping" process that OTA is able to do with Congress.

The advantage of OTA is that, while it is purposefully small, it has a large enough professional staff that, first of all, are good bullshit detectors. We've got 100-odd professional staffers here: about half science and engineering and medicine, and the other half is social science, law, economics, political science.

A Crucial 10 Minutes Away

I think we're different because OTA is a place that's close enough to the process of Congress to be a part of it, and yet just far enough removed that it has the luxury of not having to handle the daily fire fights. And they are fierce. Those poor committee staffers over there can hardly think about the next day till this day is over. So, we provide a place that's a 10-minute walk away [from the House and Senate offices], and that's a very important 10 minutes. The OTA staff gives the Congress professional people who for a year or two really get to concentrate on an issue. And then our workshops, our advisory panels, all these other things, are the heart of our payoff. Each year, we have about 2000 different people [consultants, working on a particular study] that we're substantively involved with. These are specialists of one sort or another, people who can bring a point of view to the place. It turns over. We try to remind ourselves all the time that there's hardly anybody who's *the* world expert in something. There are usually two or three of them.

***SGR.** The OTA Act and the discussions preceding its passage stressed the task of identifying the far-off side effects of new technologies. You don't seem to be doing much of that now.*

Gibbons. Probably from the beginning, but certainly for the last half dozen years or so, OTA has tried to differentiate between projections and scenarios, on the one hand, and forecasting, on the other. Forecasting means that somehow you're trying to predict what the future will be. What we try to do is to explore the environs of the future.

So when we came out, for instance, on the nuclear-waste problem, we pointed out that if you're going to

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. . . The Narrow Line Between Advice & Information

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solve it, there are about half a dozen things you've got to do. And we said, there may be other ways of getting there, but we can't find one. This is one of the few cases where OTA basically said, if you want to do it, this is the way you've got to do it. It's not working, as you know, and at least a third of the things we said you got to do, they didn't do.

We said you've got to arrive at a real social contract between the federal government and the states, and you have to have the states involved early and substantively in the discussions of nuclear-waste. You've got to provide economic rent for whatever communities or areas are going to be impacted by this thing. You have to provide a clearly defined, predictable path, because the community isn't going to buy reactors unless they can count on being able to get rid of the spent fuel.

"We Sort of Give Advice"

SGR. *Does OTA advise the Congress or does it limit itself to providing information and analysis?*

Gibbons. If by advice you mean telling them which way they ought to vote on an issue, that's very seldom visible in OTA's activities. We don't try to say, really, you ought to vote for this bill. We essentially try to provide Congress, first of all, with a set of findings: What can one pretty well agree on or stipulate in terms of the facts? And we try to identify those things where you can't get agreement on facts. And for those areas where there is disagreement that's not resolvable, we try to say why we think different experts come to different conclusions. We've done this, for instance on the Strategic Defense Initiative. We're going to be doing it on the human genome issue. We try to say, given these things we can stipulate, and these uncertainties, what are the options Congress has to deal with? We try in the options not only to reflect the facts and the uncertainties, but also different political philosophies. So, frequently we'll come up with, say, four different perspectives about an issue, as we did on MX missile basing or Soviet energy. And out of this, in the so-called policy options section, a given member of Congress ought to be able to identify him or herself in terms of their perspective on the issue and then be led to the logical things that might flow from that.

You can say, yeah, we sort of give advice. We talk about transport of hazardous waste, or the issue of toxic waste. Our advice, if you want to call it that, was that there's now a helluva lot you can do about avoiding toxic waste, to start with, by going to [manufacturing] process change. In the transport of hazardous waste, our advice is to make a uniform driver's license, because you can have a driver who's had his license suspended in 15 states but he's driving on the 16th state license. Within 60 days, that was law. So, in a sense, that's advice. It is an option, but in a way, it's advice.

More specific advice is reflected in the assignment to OTA to appoint commissions. I've had to appoint the Prospective Payment Commission for Hospital Reimbursement under Medicare. The appointment authority was given to me by Congress, as Director. I've had to appoint the Physicians Payment Review Commission, for individual reimbursement of physicians under Medicare. And under a bill passed just before the close of Congress, I was assigned responsibility to appoint a citizens advisory commission on Alzheimer's Disease. So, Congress is looking to OTA as a source of nonpartisan access to the community of people out there.

SGR. *We rarely hear of disputes about OTA's purity, but there was one in connection with your study of SDI.*

Gibbons. There have been other disputes. They largely have arisen with respect to two things: Should OTA do any defense-related work? That's one issue that the Board has wrestled with back and forth ever since its inception. The second is, should OTA get involved in things that are highly politicized? In the case of SDI, both were at issue.

All I can say about SDI is that I think we came out smelling pretty much like a rose. Even the most attacked document, which was an early background paper [*Directed Energy Missile Defense in Space,* by an OTA consultant, Ashton Carter, then of MIT; the paper was skeptical of the technical feasibility of SDI], has turned out to be right.

SGR. *The Carter paper got you deeper into political contention than is usually the case with your reports.*

Gibbons. I got surprised and caught by its release [in 1984]. We provided the paper to a bipartisan pair of Senators [Larry Pressler, R-SD, and Paul Tsongas, D-Mass.] on the Foreign Relations Committee. We had undertaken that [study] as our own sort of internal exercise of getting smarter about space-based ballistic missile stuff; they had [independently of OTA's self-initiated study] requested a study of missile defense, and the Board had approved it. These Senators then wanted a copy of [the Carter] paper to use in a Senate hearing. Well, it turned out, they wanted to use it for a particular purpose. It may have been bipartisan, but it was anti-Administration. And that's one reason that terror rained down on us for a little bit (SGR Vol. XIV, No. 12).

Then came the bigger study (*Strategic Defenses: Ballistic Missile Defense Technologies* and *Anti-Satellite*

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OTA Nearly Perished During a Tumultuous Start Up Period

Signed into law in October 1972, OTA promptly roused suspicious squints from the right, which regarded it as an anti-Nixon government of science in exile. After all, the founding statute, written by House Democrats, justified OTA's creation on the grounds that "Federal agencies . . . are not designed to provide the legislative branch with adequate and timely information, independently developed, relating to the potential impact of technological applications . . . "

For the first year after the OTA statute was passed, the agency existed only on paper, without a budget or a staff. It wasn't until late 1973, that it got a Director, former Rep. Emilio Q. Daddario. He had sponsored and pushed OTA's creation while a member of the House Science and Technology Committee, but had given up his Congressional seat in 1970 in an unsuccessful run for the Democratic gubernatorial nomination in Connecticut.

Political guidance for the agency was assigned to a Board of 12 members of Congress—evenly divided between the two houses and the two major parties. Senator Edward Kennedy (D-Mass.) signed on at once, and became the first Chairman, a post that rotates between the majority party of the House and Senate every two years. Technical guidance was assigned to a Technical Assessment Advisory Board, with Harold Brown, then President of Caltech, later Secretary of Defense under Jimmy Carter, named as Chairman. From the right, the Technical Board strongly resembled the defunct President's Science Advisory Committee, abolished in 1973 by Richard Nixon, who considered PSAC an ideological snake in the presidential bastion.

By 1977, the atmosphere around OTA was poisonous with accusations that the agency had become an appendage of the Kennedy restoration movement. Resignations were turned in by two Republican members of the Board, Rep. Marjorie Holt, of Maryland, who said the Technical Board had usurped authority at OTA, and Senator Richard Schweiker, of Pennsylvania, who said he was too busy with other duties. Daddario resigned, too, explaining that he had never intended to serve out a full six-year term.

His successor, Russell Peterson, looked like an ideal choice for healing the sickly agency. A chemist and former Republican Governor of Delaware, Peterson had served in the Nixon Administration as Chairman of the Council on Environmental Quality. But Peterson showed little interest in the peculiarities of protocol on Capitol Hill. He took office in January 1978 and 18 months later left to become President of the National Audubon Society.

During the energy panic of 1973, John H. Gibbons, a veteran of the Oak Ridge National Laboratory, had made a good impression among Congressmen while assigned in Washington to the Federal Energy Agency. He returned to Tennessee to head the Energy, Environment, and Resources Center at the University of Tennessee. When Peterson quit, the OTA Board asked Gibbons to take the job.

OTA now has a professional staff of 105 and a budget of $15.5 million. The Congressional Board reflects power on Capitol Hill. Rep. Morris K. Udall (D-Ariz.) will rotate to the Chairmanship in the next Congress, succeeding Senator Ted Stevens (R-Alaska), who becomes Vice Chairman. Assuming that the returnees to the next Congress retain their OTA Board membership—which they usually do—the Senate Democratic members will be Kennedy, Ernest Hollings (SC), and Claiborne Pell (RI); the House Democrats will be George E. Brown Jr. (Cal.) and John Dingell (Mich.).

On the Republican side, the Senate members will be Orrin Hatch (Utah), plus a successor to be chosen for the retiring Charles McC. Mathias (Md.); the House Republicans will be Clarence E. Miller (Ohio), Don Sundquist (Tenn.), and a successor for the retiring Cooper Evans (Iowa).

A comprehensive bibliography of OTA's works is *List of Publications;* recent publications and work in progress are listed in *Assessment Activities.* Both are available without charge from Office of Technology Assessment, US Congress, Washington, DC 20510; tel. 202/224-8996.

OTA *(Continued from page 6)*

Weapons, Countermeasures, and Arms Control, 470 pages, plus supplementary material, published separately by OTA in 1985 and in a combined volume by Princeton University Press in 1986). Since then, we were mandated to return to the [missile-defense] issue by the Defense Appropriations Continuing Resolution, and we're in the process now of a follow-on study of SDI technology and of the software questions.

SGR. *How does a subject get on OTA's agenda?*

Gibbons. We did a retrospective analysis about six months ago. It showed that about 90 percent of our work is traceable to questions raised with us by senior staff of the committees; that then led to meetings, then to some horsetrading, and then to a formal letter of request. We visit with committee staffers from time to time to try to find out their sense of where the world is going and what's going to be important in the next few years. And they test us out. They ask us to come over and talk with them.

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. . . In Progress: Trade, Cancer Therapy, Genomes

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In all cases, the Board looks at it very carefully and I do, too, to assure that the committees not only want that information but it's going to be relevant to some issues they're going to have to be facing within the time frame of the study. I wish we had the luxury of taking on some things that we would say, well, Congress, down in the '90s, is really going to need this information. That has to be kind of a sideline.

SGR. *What are some of the major studies now in the works?*

Gibbons. We are being increasingly asked to look carefully at the issue of international competitiveness and trade. We're doing some work on technology transfer to the People's Republic of China and the China trade. We're about to complete some work on trade in the service sector, which is of growing interest to us, because that turns out to be as competitive, if not more so, than manufacturing.

There's no hiding place out there, except in defense, where, if you're an American company, you've got a corner on the US market. That's one thing that disturbs us—that if that's a comfortable place to work because you don't have to compete with overseas folk, then maybe we are going to have an unhealthy drift of our industrial attention into the defense area.

We have an assessment on why we are losing competitiveness with other nations in the grain export market. And it has a lot to do with grain quality control, and that relates back to the technology of sorting and certifying on grains.

We're doing some work on some non-traditional methods of cancer treatment, which is a hot potato. There's a man named [Lawrence] Burton [a PhD who runs a clinic in the Bahamas], who's developed what he calls some immuno-augmented therapies for cancer treatment.

SGR. *Who asked you to take that one on?*

Gibbons. Almost all of Congress, because almost every member of Congress has a constituent that has been writing him about augmented therapy. Burton was the primary motivation on this thing, I think, because Congressman Guy Molinari (R-NY) and others heard Burton out on the problems he claimed to have been having with the National Cancer Institute about a test of his procedures. And it sort of hit a groundswell. The Burton study will be one of several that we'll be doing on the issue of non-traditional methods.

Another big question is whether, in a market economy, you can provide the consumer with more helpful information about the quality of medical care or procedures at different hospitals and the likes. Mapping the human genome is an issue that both the National Academy of Sciences and we are wrestling with. It's big science. The question is, should you map it, try to sequence it? If you do, what federal agency ought to take the lead? How should you go about it? Because it may be a multi-billion-dollar effort.

We have a continuing progression of studies related to information and communications technology, intellectual property rights and the adequacy of federal regulatory activities. We've got the whole new Clean Air Act issues, especially the problems of ozone, urban versus rural, as well as pollutants other than sulfur. Finally, one of the new ones has to do with educational technology, because we know that much potential has been heralded about these new technologies. But there are some real questions about how well they're being used or not used, and how much they might portend for the future in both providing for a more effective educational system.

SGR. *With all that to do, why isn't there pressure to expand OTA?*

Gibbons. There is, on the part of some people. Some of our Board members say they ought to double our budget. Others say that maybe some of our studies are just too detailed and concentrated, that you don't need 500 pages on this issue, because I only have time to read one page. My answer to that is that you need 500 pages in order to really write the one page with authority.

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